

DEFENSE NUCLEAR FACILITIES SAFETY BOARD

October 4, 2019

TO: Christopher J. Roscetti, Technical Director
FROM: Daniel B. Bullen, Ph.D., P.E., Cognizant Engineer
SUBJECT: Lawrence Livermore National Laboratory (LLNL) Report for September 2019

Building 332 - Evaluation of Safety of the Situation (ESS): On July 1, 2019, the Building 332 Facility Manager declared a Potential Inadequacy of the Safety Analysis (PISA) due to new information provided in the initial phases of a facility condition assessment performed in response to the ten-year seismic assessment update (See LLNL Monthly Report for July 2019). On September 19, 2019, Lawrence Livermore National Security, LLC (LLNS) submitted the Facility Manager's ESS for a potential increase in the likelihood of degradation in a Seismic Design Category 3 (SDC-3) evaluation basis earthquake (EBE). LLNS noted that this new information indicated that potential overstress conditions (causing some local deformation, but not failure) could occur in various portions of the building structure during a SDC-3 EBE. LLNS implemented compensatory measures reducing the limit for the amount of nuclear material in vault storage to decrease the unmitigated consequences to an earthquake. In addition, LLNS plans to expand the scope of the current seismic assessment to include additional structural analyses to: 1) explore retrofit options and costs; 2) determine post-retrofit building behavior to develop in-structure response spectra (for use in the assessment of the mechanical safety systems); and 3) prepare a quantitative risk assessment consisting of the development of structural component fragility functions and a probabilistic assessment of the building performance to evaluate potential changes to the seismic risk exposure assumed in the Building 332 Documented Safety Analyses.

Building 332 – Room Ventilation System (RVS) High-Efficiency Particulate Air (HEPA) Filter Replacement: On September 17, 2019, the Livermore Field Office (LFO) approved the second LLNS request for a temporary extension of age-related HEPA filter replacement requirements because of the unavailability of replacement HEPA filters due to filter qualification and manufacturing issues. Based on a review of HEPA filter surveillance data, LLNS noted there are no degradation concerns regarding these HEPA filters and continued use of these filters posed no significant additional risk to workers or the public. Based on the manufacturer's latest production schedule, LLNS expects to complete replacement and testing of all RVS HEPA filters by the end of January 2020.

Building 334 - Electron-Beam Welding in Building 334 Engineering Test Bay: On September 25, 2019, LLNS requested approval from LFO to operate the electron-beam welder in Building 334 for welding solid depleted uranium items. LLNS completed the safety basis analysis to support this request and provided page changes for the Building 334 Documented Safety Analyses. LLNS stated that there are no changes to the Building 334 Technical Safety Requirements. LLNS also completed a Major Modification Determination for the proposed operations. After completing an evaluation of key criteria for safety basis amendments, LLNS concluded that the Building 334 facility risk profile is unaffected by the proposed electron-beam welder operations.

Periodic Issue Report (PIR): On September 10, 2019, LFO transmitted the PIR to LLNS. LFO identified three deficiencies and made seven observations regarding their assessments of the verification of corrective actions closure and the LFO formal assessment review of the LLNS design review process of the fire protection system. LFO transmitted these deficiencies and observations to LLNS for entry into their Issues Tracking System.